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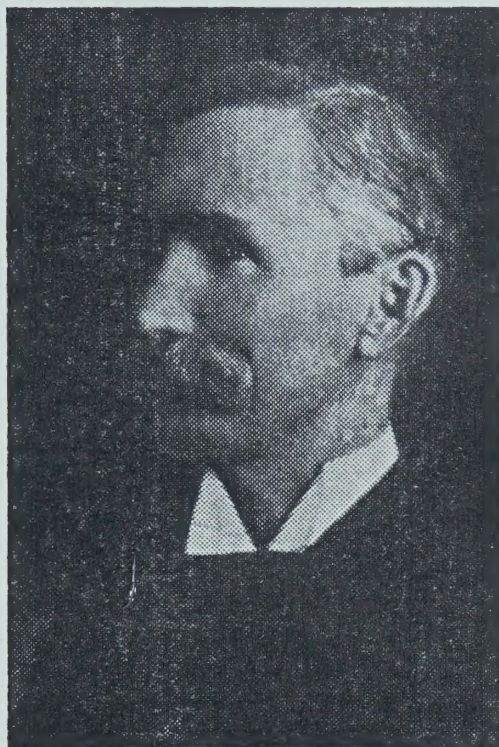


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THE CONTRIBUTIONS OF D. J. GOGGIN TO THE DEVELOPMENT OF EDUCATION IN THE NORTH-WEST TERRITORIES, 1893-1902

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D. J. GOGGIN

Introduction

The purpose of this study is to describe the work carried out by Dr. D. J. Goggin in his capacity as Superintendent of Education and Director of Normal Schools in the North-West Territories, and to assess his influence on the system of education which he directed during the period from April, 1893 to October, 1902.

It is hoped that this study will give recognition to an educator of this period of time and geographical area when a beginning system of education was being formed and shaped. The study also reveals many of the facts of the beginnings of present educational practices in Alberta. In filling this gap in Canadian educational history it is hoped that researchers will be encouraged to examine the careers of other outstanding western educationalists whose significant contributions to education are worthy of study and recognition.

The Pre-Goggin Period In N.W.T. Education . . . to 1892

Until 1875 education in the North-West Territories was carried on by missionaries working among the Indians. A modicum of success was achieved in settling some Indians as farmers, and, to a lesser degree, converting them to Christianity. (1) In 1875 state supported schools, really private schools receiving assistance from the Government, came into existence and in 1884 these schools also received support from direct taxation. Eventually, by 1892, the schools were almost totally supported by the Government.

Teacher training in the Territories was almost non-existent until provision was made to set up Normal training, conducted by Inspectors, in the Union Schools. These sessions were poorly attended because the training was not compulsory. However, provision had been made in the law for the appointment of a Normal School Director and the framework of a training system had been set up.

The previous authority in education, the Board of Education, was supplanted by the Council of Public Instruction under the provision of the Ordinance of 1892. (2) The Ordinance also provided for the appointment of a Superintendent of Education. A major change wrought by the Ordinance was the establishment of a unified school system in the territories which replaced the dual system which had existed prior to this time. Although the system of education was unified, religious minorities still had the right to establish separate schools supported by their members' taxes. The probable reason for the resolute attitude of the Territorial Assembly in bringing about this change was its determination to let nothing stand in the path of its chance to achieve the political autonomy for which it was striving.

The man who, in 1893, assumed the positions of Director of Normal Schools and Superintendent of Education was D. J. Goggin, formerly Principal of the Manitoba Normal School, and a noted educational expert in Manitoba and Ontario. The 'Who's Who' (3) of the day had this to say about Goggin's career prior to his arrival in Regina:

"Educationist, was born at Durham, Ontario, November 24, 1849, and after receiving a good public school education and obtaining a first class certificate, he for a time followed the vocation of a teacher. He was successively assistant in the Whitley High School, and Principal of the Millbrook and Port Hope Schools. He matriculated at University College, Toronto, and later, having been appointed Principal of the Manitoba Normal School entered the University of Manitoba. (B.A., 1887; M.A., 1890). In the following year Victoria University granted him the *ad eundem* degree of M.A. In 1893 he was offered and accepted the Office of Director of Teachers' Institutions in the North-West Territories, with entire charge of the educational system of the North-West Territories. While in Manitoba he was a member of the Council of Manitoba University, a member of

the Council of St. John's College, a member of the Advisory Board of Education, an examiner of the University and the Department of Education, and President of the Provincial Teachers' Association. In 1894 he served on the Dominion History Committee."

In 1900 Goggin was awarded an honorary D.C.L. degree by Trinity University and in 1901, having for a long time been an active member, he was elected President of the Dominion Education Association. His arrival in the Territories was well received by the public but with some uneasiness by certain members of the Assembly who noted that Goggin received a salary higher than that of the Premier of the Territories, and who feared further loss of control of the educational system by the Legislature of the North-West Territories.

Teacher Training And Certification

When teacher training was put upon a more formal basis in 1893 with the appointment of a Director of Normal School, and a non-professional certificate, upon the urging of Goggin, ceased to be valid as a teaching license, enrollment at Normal training sessions leaped. Goggin was highly critical of school boards who hired unqualified teachers because they could pay them a low salary or because such teachers adhered to the religious creed of school board members. About unqualified teachers Goggin said:

"Few of such teachers do more than keep school. They do not teach because they do not know how, and the children are the victims of their experiments." (4)

At first Goggin conducted the training sessions with only slight aid from Inspectors. However the course of studies at Normal School was gradually expanded and more staff members added. The course of studies resembled that of Manitoba, where Goggin had been Principal of the Normal School, which in turn was borrowed from Ontario where Goggin had been educated, trained, and had taught. Gradually the course of studies took on a character of its own with Goggin laying stress on the importance of "systematic and definite instruction" (5) in a course and thus emphasizing the value of subject matter. Emphasis also was placed upon practice teaching as well as upon absorbing the theory of teaching and its methodology. Before 1893 only 55 students had been trained at sessions held in Normal Schools in the Territories. Between 1893 and 1902 a total of 808 students was trained.

Although the Normal School, housed in its own building in 1895, did a commendable job in providing qualified teachers for the Territories, it could not keep up with the demand for such teachers. Accordingly, provisional teaching certificates were issued to partially qualified teachers. When the Council of Public Instruction was re-

placed by the Department of Education in 1901, certificates were designated interim or permanent.

To supplement the formal training received by teachers, Goggin set up teachers' Reading Courses, formalized teachers' Institutes and encouraged teachers' Conventions. Institutes and Conventions became so entrenched in the educational system, presumably because they were successful, that they exist to the present day throughout Western Canada in only a very slightly changed form.

Goggin, with the aid of his school Inspectors who acted as his eyes and ears, kept himself carefully informed on all aspects of education in the Territories. He defined an inspection as "observation and examination with a view of determining how far the school meets the needs of the pupils and the requirements of the State." (6) Goggin expected each Inspector to visit each school in his district at least once a year and the Inspectors not only managed this super-human feat but more. As a result of such diligence, whenever any part of the system of education was headed for trouble, Goggin was able to devise means to circumvent the problems. His activity and success in promoting better training for teachers indicate that he was a man of imagination as well as energy.

School Grants In The North West Territories, 1892-1902

The structure of school grants came under the influence of Dr. Goggin, just as every other aspect of education in the Territories was influenced by his thinking. Because Goggin was so vulnerable to attack in the Assembly and nothing aroused Assembly members to a high pitch of excitement more readily than a lowering of spending in their area or a general raise in taxes, the Superintendent was very discreet in his utterances on grants. Nevertheless, because of his close alliance with his admirer, Mr. Haultain, Premier of the North-West Territories, many changes in the grant structure reflect the general and specific educational thinking of Goggin.

The grant structure set up by the Ordinance of 1901 (7) remained in force, with only minor changes, until 1913. Perhaps it took that long before someone felt strong enough to assume the control relinquished by Goggin upon his resignation from his positions in the North-West Territories educational system.

Because of the influence of Goggin, grants became gradually tied up with the qualifications of teachers employed and the number of classrooms in operation. These factors remain basic in calculating school grants in the Province of Alberta today.

In the period 1892-1903 the population of the Territories grew steadily. At the same time grants increased but not in proportion

to the steadily rising school costs. The actual amount of grant per pupil declined. There was a gradual tendency, which Goggin approved, to shift the burden of financing schools from the shoulders of the Government to the local taxpayers. This trend has continued in Alberta although the taxpayers now complain that the burden is oppressive in view of the fact that local revenue is fixed since it derives almost solely from real property taxation.

Another trend which began in that period and continues until today, is the clearly marked preferential treatment received by rural areas in the appropriation of grants. This is probably due to the larger representation held by the rural areas in the Legislature but is offset to some extent, although this advantage is rapidly disappearing, by the concentration of industry in the urban areas and the consequent greater income derived from this source of taxation.

However one fact stands forth clearly and that is that the grant structure for this period of time was gradually altered so that the distribution of money was more equitable and enabled the rural areas to approximate the quality of education produced in urban areas.

But this was not Goggin's main objective in the distribution of school grants. He wished to use grant payments as a lever to encourage trustees to hire fully qualified teachers in their schools. Another of the Superintendent's motivations was to allow grant payments for pupil attendance since he felt regular attendance was necessary to the proper educational development of a child.

Some Goggin Views On Curriculum

Since Dr. Goggin held the position of Principal of Normal Schools and also was the Superintendent of Education and as such sat on the Board of Examiners, his influence reached into every area of education in the North-West Territories. Nowhere was the impact of his thinking felt more strongly or directly than in the area of curriculum. Over his years of leadership courses were revised, outlines made more detailed and, in general, the courses were made to conform closely to the educational thinking of Goggin.

That the courses of study prepared by Goggin were advanced for his day is evidenced by some of the comments made by others of his time. The London Journal of Education said:

"The North-West Territories have every educational difficulty to contend with . . . Nevertheless, this programme of Studies shows a progressive spirit nowhere excelled. The North-West Territories stands foremost among the colonies which insist on direct ethical teaching as part of the curriculum."
(8)

The Government of Great Britain published a lengthy fifty-five page synopsis of education in the Territories. In part, the Director wrote:

"May I take this opportunity of saying how warmly interested we are in the educational documents which you have issued for the North-West Territories of Canada. I have frequently heard them referred to here in terms of the warmest appreciation." (9)

The Commissioner of Education for the United States in a review of the system said:

"The Reports give evidence of advanced ideas with reference to the conditions for effective schools." (10)

The above comments do not constitute undue flattery or excessive praise when we recall that the curriculum of Goggin stood unchanged for a period of ten years after his resignation and that most of his ideas are readily accepted, with very few exceptions, by the majority of practicing teachers today.

Today, in a more complex world, few people would quarrel with Goggin's definition of the aims of education: prepare the pupil as a member of society to live a worthy life, and to earn a respectable living. But equally few would agree that these were the complete aims of education, nor could they agree on what all the aims really are.

The methods used in achieving these aims are more likely to stir up controversy today. The idea of mental discipline, so firmly accepted by Goggin and his associates, and which played such a vital part in shaping the curriculum, is today rejected by most professional educators if not by all parents. This, of course, was the theory which underlay the study of all subjects in Goggin's time, particularly the formal study of grammar.

Literature and reading were regarded by Goggin as vehicles for the transmission of the cultural heritage. This is evidenced by the fact that examinations of that period were composed of questions based directly on the material taught in the classes. Present examinations are in contrast to this practice in that emphasis is placed upon the ability of the students to read and interpret material which is new to them. However Goggin also regarded the teaching of literature and reading as a means of aiding the individual to apprehend the beautiful in life. This is a concept still widely accepted today as it was by the colleagues of Goggin. A notable difference of today lies in the modern tendency to include larger proportions of current selections in the courses whereas Goggin believed the bulk of a course should comprise the tried and true masters' works. Another concept rarely adhered to today is that content of a course shall be made as difficult as practicable since

such a course would afford students an opportunity to train themselves in logical thinking and because the sheer difficulty of a course would build the moral fibre of students in their efforts to overcome obstacles to understanding.

A seeming contradiction appears in Goggin's attitude toward the teaching of arithmetic and his attitude toward the teaching of geometry. In learning arithmetic, Goggin believed the student should memorize basic mathematical operations without regard to understanding and yet in the study of geometry he believed the student should gain an understanding of basic principles through experiencing the construction of geometrical forms. In nature study and geography he advocated the laboratory method of learning and emphasized the immense value of first-hand-experience. These are concepts, later advocated by Dewey, much in vogue today and held in high regard by educational psychologists.

As for his ideas on the direct teaching of virtue, so badly attempted by teachers in the "Manners and Morals" courses, our present "Health and Personal Development" courses have met with a similar lack of success as indicated by the tentative decision of the Department of Education to withdraw this course from the senior high school curriculum in 1961. By Goggin's own admission, this course was not a success in spite of the fact that he urged the teachers to act as living models of the practice of virtue before their students and to have students put into classroom practice the principles of virtue they learned. Perhaps the fault does not lie in the ideas but in the fact that our teachers and society are not ready to accept such concepts; on the other hand, perhaps teaching virtue directly to students in a classroom is just not a practicable idea.

Illustrations of the Progressive Thinking of Dr. D. J. Goggin

Dr. Goggin had many ideas on education which, for his day, were considered enlightened or advanced. These ideas he culled from his extensive reading and equally extensive and varied background in educational work. He believed that every student was entitled to a good education and that the qualified teacher was a chief factor in the provision of an education.

"The teacher is the main agent in producing a good school. It cannot rise above his level. Its improvement must come through his improvement, and that must come through wasteful experiments on children or through special training. In teaching, as in every other calling, the best results are accomplished by trained rather than untrained persons." (11)

Qualified teachers were produced by giving persons a broad, academic education followed by specialized training in the theory and methodology of teaching.

Examinations, in Goggin's opinion, did more harm than good in that they placed an adverse physiological and psychological strain on both students and teachers. In any event, examinations were not a reliable measure of a student's work. Together, a teacher and principal should decide when a student was ready for promotion, basing their judgment on the health, application to studies, and ability level of the student. Such a system would require the teacher to make constant evaluations of a pupil's progress, keep a principal informed, and require the student to apply himself steadily to his studies. Goggin also opposed homework for students because he felt it was an intrusion on the family time. He advocated all school work be done in the classroom where the student would acquire good work habits by working within set time limits, doing his own work, and receiving immediate assistance from teachers in surmounting problems.

Goggin's views on classroom control were particularly enlightened and humane for an era just emerging from the Victorian concept of absolute parental and adult control of minors. He believed a teacher should never enforce school rules without a rational motive for so doing. A child had to be led into acceptable social behaviour, not driven with harsh and non-understanding treatment. Self-discipline of the child was the objective of classroom control and this could not be achieved by a master-servant relationship in the classroom.

Undoubtedly other educational thinkers also held many of the views expressed by Goggin. Goggin differed from other educators however in that he was the administrative head of a system of education in a new territory. He held almost all the control, as Director of Normal Schools, Superintendent of Education and Chairman of the Examinations Board, of the entire educational system, subject only to the authority of the Legislature. As such he was in a position to put his ideas into effect since he was not hampered to any great extent by pre-conceived notions of others or by a tradition which had been successful in the past. That he did put his ideas into effect is indicated by the myriad specific changes which took place in the educational system of the Territories during his tenure in office and which conformed to his educational beliefs.

Concluding Observations

In his almost ten years of service in the educational system of the North-West Territories, Goggin succeeded in laying the basis of an educational system which was second to none on the North American Continent and which earned the respect and admiration of much of the civilized world of his time. Even after his retirement he made several visits back to speak to teachers' conventions and to

participate in disputes centering around educational problems. Nor did his resignation take him out of the educational field where he produced so fruitfully. From 1902 to 1907 he was literary manager of the Canadian Publishing Company in Toronto and in 1909 was appointed managing editor for the new Ontario school text books.

The exact reasons for his resignation are shrouded in mystery but in a letter to F. W. G. Haultain concerning his resignation Goggin gives his own estimate of his educational work in the North-West Territories.

"Early in October, for family and financial reasons, I asked permission to resign the Superintendency which I have held for nine years and a half.

The three-fold increase in schools and four fold increase in pupils, the establishment of the Normal School, Teachers' Institutes, Reading Classes and School Libraries, the improvement in the qualifications of teachers, the gradual elevation of the Course of Studies and the introduction of plans for the more equitable division of school grants are some of the important features that mark progress during this period. In higher educational ideas, in wider scholarship, in more humane discipline, in closer and kindlier relations between teachers and parents, and in ampler remuneration for teaching there has been steady advance. The full effect of these during this formative period of the Territories cannot be estimated now." (12)

A fair judgment of Goggin's career in education in the North-West Territories would be that almost single-handed he shaped the system from primitive beginnings and he was reasonably successful in achieving his goals. Even judged by the criteria of today, he was more than modestly successful as an educator.

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TEACHING WORK-STUDY SKILLS BY TELEVISION

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The Problem

Educational television has been used in schools for about ten years. In this short time it has been the focus of much varied comment.

Some educators feel that television will have an almost revolutionary effect on education. Stoddard has quoted Dr. Thomas Clark Pollock of New York University as saying: "It now seems clear, however, that television offers the greatest opportunity for the advancement of education since the introduction of printing by movable type." (12:27)

The belief that educational television will have an important place in education has received some local support. The recent *Report of the Royal Commission on Education in Alberta* has both quoted and agreed with Stoddard saying, in part: "The use of television in the educational program . . . offers great hope for meeting teacher and building shortages but more important, for raising the level of teaching." (10:248).

Not all informed opinion, however, is so optimistic about the value of educational television as a teaching tool. Wischner and Scheier, for example, summed up their reactions as follows:

In the opinion of the present writers the relatively little research available, its character and findings, do not warrant the marked enthusiasm and overoptimism about educational television evidenced in many quarters. (19:613).

While television would seem to have a place in education, both its potential and the precise nature of its contribution are still in doubt.

Purpose

The present study attempts to report the results of an experiment in educational television carried out in March, 1958 at the Education Building, University of Alberta. The purpose of the experiment was to compare the effectiveness of teaching certain work-study skills to grade five and six pupils by closed-circuit television, with the effectiveness of teaching the same lessons by conventional classroom methods.

Related Studies

Studies in educational television have been of varying quality and are difficult to evaluate, particularly as reported by secondary sources. Holmes has stated two of the problems:

First, there is no analytical correlation of results of completed research and experimentation to date. Second, summaries of studies which are current do not relate the data to what has previously been established. (5:2).

A third difficulty seems to stem from the fact that television lessons are often produced by professional, commercial television producers rather than by educators. In many studies evaluation has been an afterthought and has been planned after the project was under way. Consequently, educational television projects have not sometimes been designed so that valid and impartial conclusions about their effectiveness can be drawn.

Evaluation of educational television has mainly been of two types: first, an analysis of test results from a controlled experimental situation using comparisons of performance of control and experimental groups; and second, evaluation by means of an analysis of the results of questionnaires answered by teachers and/or pupils. Both types have often been used for the same study.

Up to the time of the writing of the thesis, of which the present article is a summary, nine educational television studies had been carried out in Canada. All of them, with the exception of the present study, have been evaluated by the questionnaire method.

A combination of both types of evaluation has frequently been used in the United States: the effectiveness of a series of television lessons has often been measured experimentally, while questionnaires have provided lesson-by-lesson "feedback" so that individual television lessons might be modified as the series has progressed.

Canadian studies

Three national studies in the use of educational television have taken place in Canada, in 1954, in 1956, and in 1960. All three national studies were planned by the Advisory Council on School Broadcasting and the Canadian Broadcasting Corporation. The following conclusions, published by the Advisory Council after the second study, summarize the Council's attitude toward educational television:

1. Television has definite value as a teaching aid in the school classroom.
2. There should be the closest possible correlation between the content of school telecasts and the school curriculum.
3. Films and telecasts are complementary rather than rival teaching aids in the classroom.
4. Participation of classroom teachers in planning school telecasts is essential.
5. Teachers can also play a valuable role in the presentation of school telecasts of the 'master-teacher' type.

6. Where expense permits and the subject allows for it (e.g. in social studies) the employment of dramatized forms of presentations is justified.
7. Educational value is to be gained by presenting school telecasts in series. (11:22).

After the second national study in 1956, the study of educational television moved from the national to the provincial and local levels. The school boards in Scarborough and Halifax, and the departments of education in Manitoba and Alberta have all directed studies. Newfoundland used television during the 1959 polio outbreak as an emergency means of transmitting lessons to students while the schools were closed.

The Canadian studies have been concerned chiefly with providing experience in planning, producing, and teaching television lessons, with exploring practical problems of production and utilization, and with an investigation of the acceptability of television lessons by teachers. The Canadian studies have provided useful answers in these areas.

Studies from the United States

Many research studies have been published in the United States in the short time that television has been used in schools there. Research in television has centered in the United States partly because of the financial support of Ford Foundation's Fund for the Advancement of Education.

In 1954 the Fund made a grant to Pennsylvania State University to explore the effectiveness and practicability of television as a medium for teaching. Subsequently, research was carried out in many of the physical aspects of teaching by television. Some of the findings have been summarized as follows:

In twenty-nine out of thirty-two controlled comparisons in seven different courses, there were no significant differences in achievement between students taught via closed-circuit television and those taught in the conventional manner. (15:26).

The largest single experiment in the use of classroom television in a school district, once again assisted by grants from the Ford Foundation, took place in Hagerstown, Maryland. This experiment was a five year project to study the ways in which television might be used in a school system to improve instruction. Tentative findings, reported in March, 1959, indicated some success for the project. In comparing arithmetic achievement, for example, the median growth for the groups receiving television lessons was greater at all grade levels. The reports from Hagerstown are difficult to analyze, however, since gains rather than significant differences in achievement were reported. (13:3).

The most extensive experiment in the use of television in schools has been the National Program in the Use of Television in the Public Schools. From the beginning of the experiment in 1957, testing and evaluation have accompanied the broadcasts. Of 110 comparisons in eleven centers, sixty-eight comparisons favored the television students while forty-two favored the control groups. There were thirty-eight cases where the differences in achievement were statistically significant: in twenty-nine of these the differences were in favor of the television classes, while in nine cases the differences were in favor of the control classes. (15:54).

According to Holmes, approximately 90 per cent of the research studies show no significant differences between results of instruction by educational television and instruction by conventional means. Holmes has also stated that face-to-face interaction produced more positive changes in critical thinking ability and "group structure." (5:76).

Many questions about educational television have yet to be answered. Nevertheless, experimental evidence has shown television to be a teaching aid of some promise.

Experimental Design

Background

The closed-circuit television project of 1958 was jointly planned by representatives from the Department of Education, the University of Alberta, and the Edmonton Public School Board.

This experiment was part of a larger study in which ten lessons were taught. Four rooms in the Education Building, University of Alberta, were used in the experiment: the cameras in the studio, a converted lecture room, were connected by coaxial cable to receiving sets in a viewing room and in the classrooms occupied by grade five and grade six of the University School. Both classrooms were equipped with two television receiving sets with twenty-one inch screens, placed at eye level at opposite corners of the front of each classroom.

The experiment

Six lessons in the work-study skills were taught over a two-week period to three different groups at the grade five and six level. A grade five and a grade six class were chosen from each of University, Rutherford, and Parkallen Schools, making a total of six classes in all. The two classes at University School were taught by means of closed-circuit television; the classes at Rutherford School were taught by the television teacher but in the conventional manner;

and the classes at Parkallen School were taught by their own teachers. All classes used the same lesson plans, visual materials, and mimeographed follow-up activities.

The two control groups, the classes at Rutherford and Parkallen Schools, were used in an attempt to eliminate the quality of performance of the television teacher as a factor in the achievement of the television groups.

For convenience in this study, the University School classes are called the TV group, Rutherford classes the TVT group, and Parkallen classes the CT group.

A number of factors were considered to be of primary importance in predicting success in learning work-study skills: these were mental age, reading ability, listening ability, and initial ability in work-study skills. An initial testing program was carried out so that the predictor variables could be measured and, in cases where significant differences were found, final test results could be adjusted statistically to nullify initial advantage. A final testing program, consisting of a re-testing in work-study skills, was scheduled so that each class would be tested on the third day following its last lesson.

The television lessons were scheduled for Monday, Wednesday, and Friday during the first two weeks of March, 1958. The lessons were taught to each group so that no group would find the timing advantageous.

Two lessons were prepared on each of the following topics: map reading, reading graphs and tables, and knowledge and use of reference materials. The content of the lessons was determined by an analysis of the Iowa Tests of Basic Skills, Work-Study Skills section, the tests used in the experiment. Reference was also made to a recognized authority in the field of teaching the work-study skills. (1).

Tests

The mental ability of each pupil was determined by results obtained from the Laycock Mental Ability Test which, in Edmonton, was administered to each pupil in grade five in November.

The California Reading Test, Form CC, was used to measure each pupil's reading ability.

The Listening section of the Sequential Tests of Educational Progress was used to measure each pupil's listening ability.

The Iowa Test of Basic Skills, Work-Study Skills section, Forms 1 and 2, were used to measure initial and final ability in map reading, reading graphs and tables, and knowledge and use of reference materials.

Analysis of Data

The data gathered from test results were analyzed in three steps: (1) a comparison of initial test results was made to test the hypothesis that the three groups could be considered equal before the experiment; (2) a comparison of final test results was made to test the hypothesis that the three groups could be considered equal after the experiment; and (3) the gains made by each group were tested for significance to test the hypothesis that each group made significant gains as a result of the experiment.

Comparison of initial achievement

Initial test results are presented in Table I in the form of means and standard deviations.

Achievement of the grade five groups on the initial tests was very similar. According to Table II, only one of the twenty-one pairs of means tested by the "t" test showed a significant difference. None of the "F" ratios, resulting from the analysis of variance, was significant. (Table III). Accordingly, the grade five groups were considered to be equal at the beginning of the experiment.

Analysis of grade six initial tests results showed significant differences in three areas: mental age, and Test W-2 and Total of the Iowa Tests of Basic Skills. In those cases where significant differences were found, they seemed to correspond closely to the mean mental ages of the groups. Although not shown here, analysis of covariance confirmed the relationships between mental age and work-study skills achievement. Thus, while the grade six groups could not be considered equal on this basis of initial test scores, the results followed a pattern corresponding to the mean mental ages of the groups. (Tables I, II and III).

TABLE I
INITIAL TEST RESULTS

Tests	Grade Five						Grade Six					
	TV (27)*		TVT (30)*		CT (26)*		TV (26)*		TVT (27)*		CT (31)*	
	Mean		Mean		Mean		Mean		Mean		Mean	
	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.	S.D.
Mental Age	146.63	12.83	141.60	16.37	142.85	15.32	163.19	15.80	152.78	12.48	155.39	16.87
Reading	107.74	11.42	100.30	14.69	104.81	13.79	114.42	9.21	110.59	10.86	111.90	11.37
Listening	273.33	9.86	272.80	8.38	273.38	9.75	280.00	8.14	277.22	7.24	279.19	10.26
Iowa Tests of Basic Skills, Form 1, Test W-1: Map Reading	19.59	5.32	20.87	5.85	18.85	5.95	18.27	5.89	15.30	5.25	16.52	3.74
Test W-2: Reading Graphs and Tables	12.85	4.21	13.13	3.79	11.81	2.14	14.15	5.70	10.33	3.88	11.06	4.24
Test W-3: Knowledge and Use of Reference Materials	30.41	9.40	28.37	10.29	31.42	9.98	34.38	9.50	29.96	8.95	32.10	9.72
Total	62.81	16.33	62.37	17.13	62.08	17.14	66.81	18.93	55.59	15.31	59.68	15.11

*Size of sample.

TABLE II
“t” TESTS OF SIGNIFICANCE OF DIFFERENCES BETWEEN
MEANS OF GROUPS ON INTIAL TEST RESULTS

Tests	Grade Five			Grade Six		
	TV-TVT	TV-CT	TVT-CT	TV-TVT	TV-CT	TVT-CT
Mental Age	1.280	NSD	.293	2.665 5% (TV)	1.787	.661
Reading	2.120 5% (TV)	.974	NSD	1.383	NSD	NSD
Listening	.219	.844	NSD	1.318	.903	.447
Iowa Test of Basic Skills, Form 1, Test W-1: Map Reading	NSD	.019	NSD	NSD	.325	.835
Test W-2: Graphs and Tables	.579	.477	NSD	1.941	NSD	NSD
Test W-3: Knowledge and Use of Reference Materials	.264	1.130	NSD	2.821 1% (TV)	2.341 5% (TV)	.682
Total	.779	.380	NSD	1.747	.891	.718
	.009	.159	NSD	2.377 5% (TV)	1.581	1.023
			NSD		NSD	NSD

TABLE III
ANALYSIS OF VARIANCE ON INITIAL TEST SCORES

Tests	Grade Five	Grade Six
	F	F
Mental Age	<1 NSD	3.35 5%
Reading	2.23 NSD	<1 NSD
Listening	<1 NDS	<1 NSD
Iowa Tests of Basic Skills, Form 1,		
Test W-1: Map Reading	<1 NSD	2.39 NSD
Test W-2: Reading Graphs and Tables	1.70 NSD	5.09 1%
Test W-3: Knowledge and Use of Reference		
Materials	<1 NSD	1.46 NSD
Total	<1 NSD	3.15 5%

Final test achievement

The analysis of final test data is presented in Tables IV, V, VI and VII.

The final test means of the three grade five groups were not significantly different according to the “t” tests. (Table V). There were no significant “F” ratios. (Table VI).

Grade six final test results showed significant differences that seemed to reflect initial advantage. Analysis of variance of gains seemed to confirm this fact. (Table VII). In addition, analysis of covariance, although not reported, showed that differences in final tests means could be accounted for in differences in initial test means.

It would seem that the methods used to teach both grade five and grade six groups had been of about equal effectiveness.

Significance of gains

The “t” test for significance of differences between correlated means was used to test the hypothesis that each group made significant gains. (Table VIII). The grade five groups all made significant gains on at least one of the Iowa sub-tests. All three grade six groups made significant gains on two sub-tests and the Total.

TABLE IV
FINAL TEST RESULTS

Tests	Grade Five						Grade Six					
	TV (27)*		TVT (30)*		CT (26)*		TV (26)*		TVT (27)*		CT (31)*	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Iowa Tests of Basic Skills, Form 2,												
Test W-1: Map Reading	19.41	4.68	20.57	5.33	20.04	3.88	22.92	5.68	18.59	5.35	21.00	4.51
Test W-2: Reading Graphs and Tables	14.48	4.88	13.66	4.33	13.85	4.25	16.27	5.06	13.78	4.74	14.58	4.27
Test W-3: Knowledge and Use of Reference Materials	30.74	9.41	28.53	10.60	30.54	9.88	34.58	10.57	29.56	9.43	32.39	9.33
Total	64.63	16.96	62.77	17.56	64.42	15.67	73.77	19.37	61.93	16.72	67.97	15.76

*Size of sample.

TABLE V
 "t" TESTS OF SIGNIFICANCE OF DIFFERENCES BETWEEN
 MEANS OF GROUPS ON FINAL TEST RESULTS

Tests	Grade Five			Grade Six		
	TV-TVT	TV-CT	TVT-CT	TV-TVT	TV-CT	TVT-CT
Iowa Tests of Basic Skills, Form 2,						
Test W-1: Reading Maps	.872 NSD	.534 NSD	.421 NSD	2.849 1% (TV)	1.412 NSD	1.085 NSD
Test W-2: Reading Graphs and Tables	.667 NSD	.500 NSD	.165 NSD	1.844 NSD	1.363 NSD	.678 NSD
Test W-3: Knowledge and Use of Reference Materials	.828 NSD	.075 NSD	.731 NSD	1.825 NSD	8.30 NSD	1.146 NSD
Total Test	.406 NSD	.047 NSD	.368 NSD	2.387 5% (TV)	1.247 NSD	1.415 NSD

TABLE VI
ANALYSIS OF VARIANCE OF FINAL TEST SCORES

Tests	Grade Five	Grade Six
	F	F
Iowa Test of Basic Skills, Form 2,		
Test W-1: Map Reading	<1 NSD	4.66 5%
Test W-2: Reading Graphs and Tables	<1 NSD	1.96 NSD
Test W-3: Knowledge and Use of Reference		
Materials	<1 NSD	1.77 NSD
Total Test	<1 NSD	3.12 5%

TABLE VII
ANALYSIS OF VARIANCE OF GAINS (FORM 2—FORM 1)

Tests	Grade Five	Grade Six
	F	F
Iowa Test of Basic Skills,		
Test W-1: Map Reading	<1 NSD	<1 NSD
Test W-2: Reading Graphs and Tables	1.37 NSD	1.41 NSD
Test W-3: Knowledge and Use of Reference		
Materials	<1 NSD	<1 NSD
Total Test	<1 NSD	<1 NSD

TABLE VIII
“t” TESTS FOR SIGNIFICANCE OF DIFFERENCES BETWEEN
MEANS OF INITIAL AND FINAL TESTS

Group	Grade Five				Grade Six			
	M ₂ -M ₁	σ _D	t	Sig.	M ₂ -M ₁	σ _D	t	Sig.
Iowa Tests of Basic Skills								
TV								
Test W-1: Map Reading	-.18	.....	.....	.....	4.65	.23	20.22	1%
Test W-2: Reading Graphs and Tables	1.63	.22	7.41	1%	2.21	.29	7.31	1%
Test W-3: Knowledge and Use of Reference Materials	.33	.36	.92	NSD	.20	.45	.44	NSD
Total Test	1.82	.47	3.87	1%	6.96	.54	12.89	1%
TVT								
Test W-1	-.30	.....	.....	.....	3.29	.29	11.34	1%
Test W-2	.53	.21	2.52	1%	3.45	.26	13.27	1%
Test W-3	.16	.39	.41	NSD	-.40	.....	.....	.....
Total Test	.40	.46	.87	NSD	6.34	.51	12.43	1%
CT								
Test W-1	1.19	.48	2.48	1%	4.48	.17	26.35	1%
Test W-2	2.04	.42	4.74	1%	3.52	.19	18.53	1%
Test W-3	-.88	.....	.....	.....	.29	.35	.83	NSD
Total Test	2.34	.54	4.33	1%	8.29	.57	14.54	1%

Findings

1. Initial achievement of the three grade five groups was approximately the same. Initial achievement of the three grade six groups was not the same but seemed to follow the pattern of their mean mental ages.

2. Final achievement of the three grade five groups was approximately the same. Final achievement of the three grade six groups seemed to correspond closely to their initial achievement.

3. All groups in both grade five and six made significant gains as a result of the six lessons in work-study skills.

4. The grade five and six groups taught by the classroom teachers showed the greatest gains, although differences in gains between these groups and the groups taught by the television teacher were not significant.

Limitations

1. The conclusions made as a result of the experimental part of this study are valid to the extent that the experimental design prevented a warping of evidence by uncontrolled factors, that the tests used measured what they purported to measure, and that the statistical methods used were effective in summarizing the test results.

2. No attempt was made to measure the novelty effect of television on the results of this experiment. It is possible that students watching the television lessons were motivated to an extent which could not be duplicated in a longer series of lessons, or in a series of television lessons which were not experimental in nature.

Conclusions

1. Under the conditions established in this experiment, grade five and six students learned work-study skills as well by means of television lessons as by classroom lessons.

2. Grade five and six pupils were able to make significant gains in achievement as a result of six lessons in work-study skills taught during a period of two weeks.

3. There was some evidence to suggest that the regular classroom teacher was somewhat more effective than the teacher new to the class.

Recommendations

As measured in this experiment, grade five and six students were able to learn work-study skills by means of television lessons. Many kinds of learning were not measured, however: concept de-

velopment, critical thinking, group participation, and oral and written expression are important areas which must be considered when estimating the total efficiency of instruction. It may be that television has a useful motivational effect which would make it a valuable supplement to classroom teaching, but the present experiment did not attempt to gather evidence to support this possibility.

Television would undoubtedly be useful as a means of instruction where no teacher was available, such as for correspondence students. Further evidence may show television to be an effective aid to classroom teaching. There did not seem to be sufficient evidence from this experiment or from other experiments to date to support or deny the exclusive use of television as a means for direct teaching.

Many questions about educational television remain to be answered. These questions can be answered only by the careful evaluation of experimental projects planned in the light of existing evidence. A number of areas for investigation are suggested by the present study:

1. The present experiment measured the immediate recall of information. What effect would teaching by television have on the retention of information such as that in the areas of the work-study skills?
2. The lessons taught as part of this experiment were rather more condensed and intensive than might normally be desirable. What would be the effect on learning of a longer series of television lessons?
3. The skill with which the television lessons are utilized by the classroom teacher is an important factor in their total effectiveness. How may the television lesson and the follow-up activities be structured so that maximum participation and effectiveness result?
4. The methods used by the television teacher in this experiment produced certain measured results. Would either modification of methods and techniques used or wholly different methods produce more desirable results?
5. The testing carried out in this experiment measured only a part of the learning which probably took place. What would be the effect of a series of television lessons on critical thinking, attitudes, or concept development?

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A STUDY OF DIVISION TWO SOCIAL STUDIES READING SKILLS

GEORGE R. HISLOP

The Problem

This study was part of a larger study conducted by the University of Alberta. The University experiment was a pilot study investigating the development of problem-solving skills at the division two level. Teaching techniques designed to give intensive training along problem-solving lines were used in the experimental classrooms. This smaller study attempted to explore the effects of the program of intensive training along problem-solving lines in one area—the use of social studies reading skills. It attempted also, to evaluate the transfer of improvement in the use of social studies reading skills on social studies problems to the use of these skills on reading problems of a social studies type without guiding questions.

Related Studies

An investigation of the curriculum guides, of writings by Russell (9, p. 237) and Fay (5) and a research by Leggitt (8, pp. 676-687) and Anderson (1, pp. 220-221) provided a number of social studies reading skills and suggested the importance of developing them. The term social studies reading skills means those skills that are necessary for solving a written social studies problem including skills in reading and interpreting written social studies material, in locating information and using information to solve a social studies problem.

Social studies reading skills are needed for problem-solving. They may be developed by a program of intensive training and their development may assist students in more than one subject area. In their research into the problem-solving processes of senior or college students, Buswell (4) and Bloom and Broder (3) found that successful students were superior in the use of study reading skills. Leggitt (8) found that systematic practice periods will develop these skills. Artley (2, p. 470) stated that "the social studies teacher who develops effectively the skills essential to adequate comprehension in his area probably will note a general improvement in other content fields." Further, Russell (9, pp. 175-176) listed ten ways in which every intermediate or upper grade teacher may give guidance in developing abilities most of which are useful in reading, arithmetic, science, social studies, health materials and

art materials. Apparently, improvement in the use of skills in one subject area will result in improvement in ability in a related subject area where these skills may be applied.

The methods used by Artley (2) in his study of reading comprehension, and Buswell (4) and Bloom and Broder (3) in their problem-solving investigations were examined. It was found that Artley used the scores from standardized tests to measure achievement in reading comprehension, whereas Bloom and Broder selected problems from College examinations to investigate problem-solving processes, and Buswell constructed problems to investigate the use of certain problem-solving abilities. Buswell and Bloom and Broder used the individual interview techniques to observe problem-solving processes, and in the Bloom and Broder investigation the interviewers made written records of the verbalized responses of the pupils. Apparently, statistical refinements cannot be used in reporting the findings of an investigation into reading and thinking processes. Buswell reported his findings in tables and Bloom and Broder used verbal descriptions. However, Bloom and Broder developed a check-list to record the oral responses to problems made by the pupils during the interviews. It was felt that these procedures could be adapted to an investigation into the use of social studies reading skills at the division two level.

Selection of Pupils

For this investigation, sixty division two pupils were selected from the experiment and control classrooms of the University of Alberta experiment in the development of problem-solving skills. Early in February 1958, the S.T.E.P. (10) tests of social studies and of reading, forms 4A and 4B, were administered to all the pupils of the University study. On the basis of scores made on the S.T.E.P. test of reading five high and five low achievers were selected from each of the three grades in the experimental and control classrooms. Thus there were fifteen high and fifteen low achievers from the experimental schools, and fifteen high and fifteen low achievers from the control schools, or a total of sixty pupils. The pupils from the experimental classrooms were paired with pupils from the control classrooms on the basis of scores made on the S.T.E.P. test of reading. The S.T.E.P. test of reading is designed to assess pupils' ability to understand and interpret printed material. Thus the pupils were equated in their ability to use a fundamental skill.

From February until June all the pupils in the experimental classrooms of the University study received intensive training in problem-solving. Various models, materials, and techniques were employed by the teachers (6, pp. 167-168). In June, pupils from

experimental and control classrooms were again tested. Alternate forms of the S.T.E.P. tests of social studies and reading were used. It was found that three pupils selected for the smaller investigation into the use of social studies reading skills had moved and were no longer available. Fortunately, two were a matched pair from the low achievers in grade four. The other was a grade five high achiever from an experimental class. Her partner in the control class was dropped. This reduced the number of pupils in this investigation to fifty-six, fourteen pairs of high achievers and fourteen pairs of low achievers.

Tests and Problems

To investigate growth in the ability to use social studies reading skills, it was decided to use a combination of a standardized test, the S.T.E.P. test of social studies; problems selected from the S.T.E.P. test of social studies; and problems developed especially for use in the study. The problems selected from the S.T.E.P. test of social studies and problems developed especially for the study were used in individual interviews, where records were made of the problem-solving processes of the pupils. The scores from the S.T.E.P. test of social studies revealed the results obtained by using social studies reading skills on a standardized test; written records of the verbalized responses of the pupils during the interviews gave insight into the use of social studies reading skills on a standardized test, on social studies material in a practical school situation, and on a social studies type problem with content not taken from the social studies field.

To observe the processes used to solve problems on a standardized test twenty-seven questions from Form 4A, and a corresponding twenty-seven questions from Form 4B of the S.T.E.P. test of social studies were selected. These questions required the ability to understand a problem, to interpret maps and other pictorial material, to select and interpret data, to draw conclusions, and to locate information in books.

Two problems with equivalents for later testing were developed in an attempt to study further the problem-solving skills used by these pupils in a practical school situation. One problem was designed to test the pupil's ability to use the library, and to plan a report to a larger group. The second problem was taken from Part II of the Wrightstone Test of Critical Thinking in the Social Studies in Grades Four, Five and Six (12) and adapted for use in this study. The problem consisted of a paragraph followed by four statements to be marked as proven true or false or not proven by

the facts stated in the paragraph. The statements were changed to questions that would require the pupils to phrase an answer.

To evaluate growth in the ability to use social studies reading skills on problems of a social studies type a pair of problems, one for initial testing and one for final testing, was devised. The pupil was asked to solve a problem of non-social studies content but was not given guiding questions. This part of the testing was designed to investigate transfer of growth in the ability to use social studies reading skills from social studies problems to non-social studies problems.

Procedure

The February and the June scores on the S.T.E.P. test of social studies by the pupils selected for this study were obtained from the person in charge of the University study.

The initial interviews took place in February a few days after the S.T.E.P. tests in reading and social studies had been administered to the pupils in the University of Alberta study. Early in June, the final interviews were carried out. Both times the pupils were transported to central locations where they were asked to "think aloud" as they answered and gave reasons for their answers to the problems selected from the S.T.E.P. test of social studies and to the problems with and without guiding questions. Following a set procedure, the interviewers attempted to elicit as full a response as possible and record it in writing.

The protocols, or records of verbalized responses, were marked with the aid of a check-list and a check-list guide. Social studies reading skills listed by Russell (9) and Fay (5) were selected for a check-list and then the check-list was adapted to the protocols. In its final form there were thirteen categories under three headings:—

CHECK LIST ON SOCIAL STUDIES READING SKILLS

I. *General Reading Ability*

1. Skill in defining the problem.
2. Skill in recognizing and understanding key words.
3. Skill in translating difficult material into more familiar terms.
4. Skill in interpreting pictorial representations, graph legends and symbols.
5. Skill in interpreting a map.

II. *Ability to Solve a Social Studies Problem or Problem of a Social Studies Type*

1. Skill in arranging ideas in sequence.

2. Skill in recognizing the limits of data.
3. Skill in picking out relevant data for a purpose.
4. Skill in using outside information to assist in reaching a solution.
5. Skill in drawing satisfactory conclusions.

III. *Ability to Use Social Studies Materials to Gather Information*

1. Skill in the use of the library.
2. Skill in locating information in a book.
3. Skill in preparing a report to a larger group.

A satisfactory degree of objectivity in marking was necessary. To simplify marking, the numbers of the problems were placed opposite the category to which each applied. A check mark (✓) or an (x) was placed by the problem number. To give the markers a definite basis upon which to evaluate the responses a check-list guide was drawn up. Each protocol was marked by three markers working independently. The score allotted to the pupil was the average of the scores given by the three markers. The marked check lists were carefully compared and disagreement among the markers counted. The percentage disagreement in marking the protocols from the first round of interviews was 4.2%; for the second 3.3%.

Results

The t-test (7, pp. 184-185) and the sign test (11, pp. 68-75) for differences in paired samples were used to treat the February and June scores. These tests were suitable for small numbers. Tabulation of the results required twelve full-page tables which may be summarized in four tables using the following abbreviations:—

H. A.—High Achievers

L. A.—Low Achievers

E. H.—High Achievers from the experimental schools

C.H.—High Achievers from the control schools

E.L.—Low Achievers from the experimental schools

C. L.—Low Achievers from the control schools

S.T.E.P. scores—Scores from the S.T.E.P. test of social studies

V. R. S.T.E.P. Problems—Verbalized responses to problems
selected from the S.T.E.P. test of
social studies

V. R. S. S. Problems—Verbalized responses to social studies prob-
lems with guiding questions

V. R. Problems W. G. Q.—Verbalized responses to problems of
the social studies type without guid-
ing questions

G. H. M.—Group obtaining higher mean.

TABLE I
DIFFERENCE IN FEBRUARY SCORES (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
H. A.	S.T.E.P. Scores	E. H.	.1370	.....
L. A.	S.T.E.P. Scores	C. L.	.6337	.....
H. A.	V. R. S.T.E.P. Problems	C. H.	1.1353	.....
L. A.	V. R. S.T.E.P. Problems	C. L.	.2196	.....
H. A.	V. R. S. S. Problems	C. H.	.0106	.....
L. A.	V. R. S. S. Problems	E. L.	1.1451	.....
H. A.	V. R. Problems W. G. Q.	E. H.	.4472	.....
L. A.	V. R. Problems W. G. Q.	C. L.	2.3763	.05

TABLE II
DIFFERENCES IN JUNE SCORES (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
H. A.	S.T.E.P. Scores	E. H.	.2356	.....
L. A.	S.T.E.P. Scores	C. L.	.561	.....
H. A.	V. R. S.T.E.P. Problems	E. H.	3.272	.01
L. A.	V. R. S.T.E.P. Problems	E. L.	.808	.....
H. A.	V. R. S. S. Problems	E. H.	2.222	.05
L. A.	V. R. S. S. Problems	E. L.	.844	.....
H. A.	V. R. Problems W. G. Q.	E. H.	3.157	.01
L. A.	V. R. Problems W. G. Q.	E. L.	2.427	.05

TABLE III
AMOUNT OF IMPROVEMENT FEBRUARY TO JUNE (T-TEST)

Groups	Type of Data	G. H. M.	t-value	Level of Significance
E. H.	S.T.E.P. Scores .....	.....	4.677	.01
C. H.	S.T.E.P. Scores .....	.....	2.173	.05
E. L.	S.T.E.P. Scores .....	.....	2.746	.02
C. L.	S.T.E.P. Scores .....	.....	2.711	.02
E. H.	V. R. S.T.E.P. Problems .....	.....	3.886	.01
C. H.	V. R. S.T.E.P. Problems	*	.2097	.....
E. L.	V. R. S.T.E.P. Problems .....	.....	2.1417	.10
C. L.	V. R. S.T.E.P. Problems .....	.....	.768	.....
E. H.	V. R. S. S. Problems .....	.....	3.182	.01
C. H.	V. R. S. S. Problems	*	.372	.....
E. L.	V. R. S. S. Problems .....	.....	2.121	.10
C. L.	V. R. S. S. Problems .....	.....	3.0782	.01
E. H.	V. R. Problems W. G. Q. ....	.....	‡	.....
C. H.	V. R. Problems W. G. Q.	*	3.7319	.01
E. L.	V. R. Problems W. G. Q. ....	.....	1.229	.....
C. L.	V. R. Problems W. G. Q.	*	3.0542	.01

*February scores were higher than June scores.
‡Total improvement was calculated to be zero.

TABLE IV
DIFFERENCE IN IMPROVEMENT FEBRUARY TO JUNE
(SIGN TEST)

Groups	Type of Data	G. H. M.	Probability
H. A.	S.T.E.P. Scores	E. H.	.213
L. A.	S.T.E.P. Scores	C. L.	.910
H. A.	V. R. S.T.E.P. Problems	E. H.	.006
L. A.	V. R. S.T.E.P. Problems	E. L.	.213
H. A.	V. R. S. S. Problems	E. H.	.046
L. A.	V. R. S. S. Problems .....	.....	.....
H. A.	V. R. Problems W. G. Q.	E. H.	.006
L. A.	V. R. Problems W. G. Q.	E. L.	.006

It is evident from Table I that at the beginning of the study the groups of high and low achievers from the experimental schools did not show a significant difference from the groups of high and low achievers from the control schools in:

- (a) the use of social studies reading skills as shown by the S.T.E.P. test of social studies
- (b) verbalized responses to certain problems from the S.T.E.P. test of social studies
- (c) verbalized responses to problems with guiding questions

The high achievers from the experimental schools were not found to be significantly different from the high achievers from the control schools in verbalized responses to the problems without guiding questions. However, the low achievers from the control schools were found to be significantly better than the low achievers from the experimental schools in this respect. It was considered fortunate that it was the scores of the group from the control schools that were higher.

As can be seen in Table II, in June the groups of high and low achievers from the experimental schools were not significantly different from the groups of high and low achievers from the control schools in the use of social studies reading skills as shown by the S.T.E.P. test of social studies. However, Table III shows that the amount of improvement from February to June of the high achievers from the experimental schools was significant at the .01 level whereas the amount of improvement of the control group was significant at the .05 level, a lower level. Table III shows that the high achievers from the experimental schools were superior to the high achievers from the control schools in verbalized responses to problems from the S.T.E.P. test of social studies, and to social studies problems with guiding questions. The differences were significant at the .01 and .05 levels. The superiority of the group from the ex-

perimental schools in these two respects is further evident in Tables III and IV. In these respects, the low achievers from the experimental schools are shown in Table III to be not significantly different from the low achievers in the control schools.

Apparently, the pupils found the problem without guiding questions used in June more difficult than the problem used in February. The two problems appeared to require the use of the same skills but the data in the problem used in February may have been more familiar than the data in the June problem. At any rate, the scores of both groups from the control schools are shown by Table III to be significantly lower in June, whereas the scores of the group of high achievers from the experimental schools showed no gain and the scores of the group of low achievers showed a non-significant gain. As can be seen in Table II, the high achievers from the experimental schools were superior, in June, to the high achievers from the control schools and the difference was significant at the .01 level. The low achievers were significantly superior to the low achievers from the control schools even though the control group had been superior in February. The significance of the difference in improvement was further proven by use of the sign test, as can be seen in Table IV. The probability of .006 for both high and low achievers indicated a highly significant difference between the final performance of the pupils from the experimental schools, relative to their initial performance, and the final performance of the pupils from the control schools relative to their initial performance.

Conclusions

1. Although the training conducted by the University of Alberta was carried on for only four months it resulted in a worthwhile improvement in the use of social studies reading skills on social studies material, particularly by pupils at the upper level. Although neither high achievers nor low achievers from the experimental schools were significantly superior to the corresponding group from the control schools in the use of social studies reading skills as shown by the S.T.E.P. test of social studies, the amount of improvement shown by the group of high achievers from the experimental schools was significant at a higher level than the amount of improvement shown by the high achievers from the control schools. The initial scores made by many of the high achievers were close to the possible scores on the S.T.E.P. test of social studies. It may be that it was impossible for the high achievers from the experimental schools to show an improvement significantly greater than the improvement shown by the group from the control schools. In verbalized responses to problems from the S.T.E.P. test of social studies and

social studies reading problems with guiding questions the high achievers from the experimental schools were superior to the high achievers from the control schools. Perhaps a longer period of intensive training would produce significant results with the low achievers.

2. Apparently, intensive training in the use of social studies reading skills will assist pupils in related areas where these skills may be applied. Both the high and the low achievers from the experimental schools revealed a marked improvement in the ability to solve a problem of the social studies type without guiding questions. It is of interest to note that the group of low achievers from the experimental schools had not shown significantly greater improvement in the use of social studies reading skills on social studies problems with guiding questions. Probably the low achievers found the content of the social studies problems rather difficult, whereas the content of the problem of the social studies type was more within their experience. Consequently, the improvement of the group from the experimental schools in ability to read intelligently became apparent in the short four month period.

3. It was obvious that many pupils used dubious problem-solving procedures. The verbalized responses to problems from the standardized test revealed that the pupils selected answers by guessing if they were unable to use more intelligent means. Guessing could not be used as extensively to solve the problems with and without guiding questions. However, many pupils solved these problems on the basis of their personal feelings, or their imaginations, rather than by analyzing the information given. Evidently, verbalized responses can be analyzed to yield insight into the problem-solving processes of division two pupils.

4. Apparently, the interview technique can be used successfully with pupils of grades four, five and six. In this study the pupils received only a brief orientation before they were asked to respond to the test problems. In most cases their responses were satisfactory.

5. Verbalized responses from interviews, as outlined in this study, can be marked with a satisfactory degree of objectivity.

Educational Implications

1. Teaching techniques similar to those used by the teachers in the experimental schools of the University of Alberta study should be put to wider use.

2. Apparently, a longer period of training is required to produce significant results with pupils who are low achievers on a standardized reading test.

3. It appears that the techniques developed in the University study will assist pupils in several subject areas. Improvement in ability to solve the problem of a social studies type with content not taken from the social studies field would seem to indicate improvement in ability to solve certain problems in health, arithmetic, science, and some other subjects.

Observations of the Writer

Impressions gained by the writer, while marking the verbalized responses, led him to make certain observations.

1. Most division two pupils need to be taught to read problems carefully so that they have a clear understanding of what is required of them.
2. Most division two pupils need to be taught to read critically.
3. Many division two pupils need training in reading maps and charts.
4. Many division two pupils need training in reporting skills.

Limitations of the Study

The validity of the conclusions and recommendations may be affected by certain assumptions made at the beginning of the study and by the selection of pupils.

1. The S.T.E.P. test of social studies was assumed to be a valid measure of reading skills.
2. It was assumed that the problems with and without guiding questions were valid as measures of social studies reading skills.
3. It was assumed that division two pupils would be able to verbalize reasons for their answers to the various problems, and that an analysis of the verbalized responses would reveal their ability to use social studies reading skills, and yield insight into their problem-solving methods.
4. It is probable that more significant results may have been obtained from a training program carried on for a longer period of time.
5. It is possible that with a larger number of pupils somewhat different results might be obtained.
6. The pupils were selected on the basis of the S.T.E.P. test of reading. It is possible that intelligence and personality factors might affect the results of the study.

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ACHIEVEMENT TEST PERFORMANCE OF ACCULTURATED INDIAN CHILDREN

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During the last half century, a considerable amount of research effort has been directed to the comparison of North American Indians and whites on measures of achievement. Such studies have shown a consistent superiority of white subjects on all scales and subscales. In general, investigators have been commendably cautious regarding those considerations which call for caution in interpreting this Indian-white differential: (a) the construction, standardization, and interpretation of these measures have been in terms of the modal white population, and (b) historically, the cultural characteristics of the North American Indian have been identifiably different from those of the modal norming group. For most measures of achievement, these considerations may be put in another way: achievement tests are constructed on the assumption that all of the individuals tested have had equal opportunity to learn those cultural factors necessary to the taking of the tests. When these tests are administered to North American Indian subjects, this necessary assumption is not easily met. We may expect, if this is the case, that the performance differences between North American Indians and whites will be smaller in cases where the Indian subjects and white subjects have experienced a common background. The available data are consistent with this expectation. Such a tendency can be noted in comparing early studies of Indian-white performance (3, 4, 5, 6, 7) with later studies (1, 2, 8, 9).

The present study is a further testing of the assumption that Indian-white performance differences on achievement tests are decreased with increased acculturation of North American Indian groups. The study was undertaken in the public schools of Lapwai, Idaho, where a sizeable proportion of the pupil population comprises Nezperce Indians. What is particularly relevant, in view of the concern stated here, is that the Nezperce Indians in this community are highly acculturated. No easily discernable distinctions can be made between the effective environments of the Indian and white groups: The Nezperce do not speak their native language at home, socio-economic indices for the two groups are quite similar, the usual age difference between the two groups in school does not obtain, and differential treatment of the two groups in the schools is not apparent. To state the foregoing more cautiously, while it may be

assumed that some cultural differences are represented in these two groups, we are probably safe in saying that the Nezperce Indians here represent a more highly acculturated group than is found in most other Indian-white communities.

This relatively unique situation provides an opportunity for testing the assumption that with increased acculturation of Indian groups, performance differentials on achievement tests will be decreased. In view of this, the following achievement tests were administered to all regularly enrolled pupils in the Lapwai secondary schools: the Cooperative English Test of the Educational Testing Service, and the Essential H. S. Content Battery, published by the World Book Company. For purposes of comparison, the "Indian" group was defined by the criterion used in the United States Indian Service, which classifies any individual as Nezperce who has one-fourth or more Nezperce blood.

Results

Table I summarizes the findings by grade level and measure of achievement. Only three of the nine differences in means are significant at the .05 level. It is interesting to note that the greatest differences occurred in the areas of mathematics and science. This

TABLE I
COMPARISON OF COOPERATIVE ENGLISH TEST SCORES,
AND ESSENTIAL HIGH SCHOOL CONTENT BATTERY
SCORES FOR INDIAN AND WHITE PUPILS

	Indians			Whites			Sig. of Mean diff.
	N	Mean	SD	N	Mean	SD	
Cooperative English Test Grades 9-12							
Reading Comprehension	41	17.9	19.3	79	25.4	20.6	sig. (10%)
Mechanics of Expression .....	.....	20.2	19.1	.....	20.1	15.8	non-sig.
Effectiveness of Expression .....	.....	16.3	14.4	.....	22.8	16.2	sig. (5%)
Total .....	.....	15.3	17.0	.....	19.9	15.3	non-sig.
Essential H.S. Content Battery Grades 10-12							
Mathematics	19	28.6	18.2	43	39.7	18.3	sig. (5%)
Science .....	.....	45.7	22.4	.....	58.7	22.0	sig. (5%)
Social Studies .....	.....	26.5	16.2	.....	32.6	17.3	non-sig.
English .....	.....	38.6	21.0	.....	39.5	22.3	non-sig.
Total .....	.....	29.6	18.6	.....	38.4	18.2	sig. (10%)

suggests that perhaps such cultural differences as still exist between these groups center around those abstract and rational approaches to life which are probably more prevalent in the modal white population than in the Indian population. It is relevant to note, in view of the general orienting hypothesis put forward, that the variability of scores was quite similar for both groups. Taking the .10 level as significant, there were no significant differences between standard deviations of the two groups. Although the data are not reported, the range of scores for each group was very similar. In some instances the Indian group had a greater range than the white group. All distributions were positively skewed.

The data presented in the present study are consistent with the orienting hypothesis already noted: performance differentials between modal and non-modal cultural groups will decrease with increased acculturation of the non-modal group. Certainly the absolute differences found in this study are smaller than those found in previous studies. Moreover, in one instance the absolute difference in means was in favor of the Indian group.

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STAFF MEETINGS IN ALBERTA SCHOOLS

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The regulations of the Department of Education require that a meeting of the teachers in every school in which more than two teachers are employed should be held at least once each month; it is the duty of the principal to convene such meetings and the duty of the assistant teachers to attend.¹ Apart from any regulations, writers in the field of supervision emphasize the usefulness of staff meetings as a means for improving the instructional program of a school. For the above reasons staff meetings have become, or should have become, an integral part of the operation of almost every school in this province and a part of the experiences of the teachers and principals in these schools. In spite of this very little is known about staff meeting practices or about how the personnel concerned with the meetings react to them.

Purposes of the Study

The main purpose of the study was to determine the opinions of teachers and principals concerning the purposes and practices which should be followed in holding staff meetings and to compare these with the actual purposes and practices as reported by the same teachers and principals. An attempt was also made to determine the ways in which teachers and principals found the meetings helpful as well as the problems which were encountered. On the basis of the study and of the literature on the subject recommendations were to be drawn for the improvement of staff meetings.

Method of Study

A questionnaire was designed for the purpose of obtaining the necessary information concerning both opinions and practices. The instrument was distributed to 431 teachers and 145 principals in 145 different schools which had been selected at random from the list of accredited secondary schools in Alberta. The study was, thus, restricted to schools which included at least some Senior High School courses as part of their programs. City schools were excluded from the study.

Four hundred sixty-three completed² questionnaires were re-

¹The Department of Education Act, R.S.A., 1942. Order in Council No. 1724/52, Revised General Regulations of the Department of Education for the Operation of Schools."

²Not all respondents completed every question.

turned by 119 principals, twenty-eight vice-principals, and 316 teachers. This represented a return of just over eighty per cent of the questionnaires which were distributed.

Purposes of Staff Meetings

The questionnaire suggested eleven purposes for which staff meetings might be held, and respondents were instructed to rank these according to their opinions of the order of importance of the purposes for holding staff meetings in their particular school. Respondents were again required to rank the purposes but this time it was according to the amount of time and attention devoted to each at the staff meetings in their schools. Since each purpose was assigned ranks covering almost the entire range of possibility, a frequency distribution of eleven categories was formed for each purpose. The median of each distribution was computed, and the purposes were then ranked according to the relative sizes of the medians. In making comparisons the median test was used to determine which differences were statistically significant.³ The one per cent level of significance was used.

Opinions

Teachers felt that the three most important reasons for holding staff meetings should be to discuss school discipline and pupil management, to try to improve the school's instructional program, and to study and discuss teachers' classroom problems in that order. Table I shows the rank assigned to each of the eleven purposes including those just listed and also shows that discussing community relations and providing a social activity for teachers were assigned the lowest rank orders.

The opinions of the principals are summarized in Table II and this shows that they agreed with the teachers as to which purposes should be among the top six and which should be among the last five but disagreed as to exact rank orders. A number of the differences were statistically significant. The principals were of the opinion that more importance should be attached to evaluating and to attempting to improve the instructional program than did the teachers. Principals would place less emphasis than teachers on discussing school discipline and would allot less time for principal's announcements at the meetings.

Reported Practices

Table I shows that the topics which were given the most time and attention included discussing school discipline, announce-

³Sidney Siegel, *Nonparametric Statistics for the Behavioral Sciences* (New York: McGraw-Hill Book Co., 1956), pp. 111-116.

TABLE I
COMPARISON OF THE OPINIONS OF TEACHERS WITH
THEIR REPORTS OF PRESENT SCHOOL PRACTICE
REGARDING THE ORDER OF IMPORTANCE OF ELEVEN
PURPOSES FOR HOLDING STAFF MEETINGS

	Opinion N = 305	Practice N = 284
	Rank	Rank
To discuss school discipline and pupil management	1	1
To try to improve the school's instructional program through a study of improved methods and procedures	2	6*
To study and discuss teachers' classroom problems	3	4
To discuss proposed administrative changes	4	3
To evaluate the present instructional program in the school	5	7*
To develop staff unity and morale	6	9*
To review current administrative practices	7	5
To discuss professional matters other than those relating directly to instruction	8	8
To provide an opportunity for the principal to make announcements to the staff	9	2*
To study and discuss community relations	10	10
To provide a social activity for teachers	11	11

*Differences in rank between opinions and reported practices indicate a difference which is statistically significant at the .01 level.

ments by the principal, and discussing proposed administrative changes. These were followed by studying teachers' classroom problems, reviewing current administrative practices, and attempting to improve the school's instructional program. It would appear that very little time is devoted to discussing community relations and to using the meetings as a social activity for the teachers.

A comparison of Table I with Table II shows that teachers and principals did not agree entirely as to the actual emphasis on purposes at staff meetings. They did agree that most time and attention was devoted to school discipline and pupil management and that the least time and attention was devoted to community relations and providing a social activity for teachers. Those were only three, however, which received identical rank orders. Of the differences five were statistically significant. As compared to teachers, principals reported less time spent on announcements and discussing professional matters other than those related directly to instruction. They also reported more time devoted to improving the school's instructional program, evaluating the present program, and to developing staff unity and morale.

TABLE II
COMPARISON OF THE OPINIONS OF PRINCIPALS WITH
THEIR REPORTS OF PRESENT SCHOOL PRACTICE
REGARDING THE ORDER OF IMPORTANCE OF ELEVEN
PURPOSES FOR HOLDING STAFF MEETINGS

	Opinion N = 111	Practice N = 110
	Rank	Rank
To try to improve the school's instructional program through a study of improved methods and procedures	1	3*
To evaluate the present instructional program in your school	2	6*
To study and discuss teachers' classroom problems	3	2
To develop staff unity and morale	4	4
To discuss school discipline and pupil management	5	1*
To discuss proposed administrative changes	6	5
To review current administrative practices	7	7
To discuss professional matters other than those relating directly to instruction	8	9
To study and discuss community relations	9	10
To provide an opportunity for the principal to make announcements to the staff	10	8
To provide a social activity for teachers	11	11

*Differences in rank between opinions and reported practices indicate a difference which is statistically significant at the .01 level.

Comparisons of Opinions and Reported Practices

By comparing the opinions of teachers with the practices they reported and the opinions of principals with the practices which they reported it was possible to determine the purposes which each group feels should be emphasized more or less than at present. These comparisons are shown in Table I and Table II.

Table I shows that there were four instances in which the difference between the practice reported and the opinion was statistically significant. It would appear that teachers favor placing more emphasis on trying to improve the school's instructional program, on evaluating the present instructional program, and on developing staff unity and morale. On the other hand they appear to favor a reduction in the amount of time which is devoted to principal's announcements at staff meetings.

Table II shows that the opinions of principals differed significantly from the practices they reported in three areas. They favored increasing the time and attention given to attempting to improve the school's instructional program and also to evaluating the present

program. A decrease in the time and attention was indicated for school discipline and pupil management.

It is encouraging to note that teachers and principals agreed in favoring increased time and attention for attempting to improve the school's instructional program and for evaluating the program. This is in general agreement with the literature in the field.

Practices in Holding Staff Meetings

The questionnaire also sought to determine the opinions of the respondents concerning various common practices and also the actual practices being followed in connection with staff meetings. In one set of questions the respondents selected responses from a number provided. In another set, the respondents indicated the frequency with which certain practices are carried out and should be carried out. Respondents also answered questions in which they indicated what they considered to be the values of holding staff meetings, the problems which were encountered, and their suggestions for improving the meetings.

Time, Number, and Place of Meeting

Respondents appeared to be willing to have the amount of time which they spent at staff meetings increased. Over 60 per cent indicated that they were in favor of spending at least two hours per month while more than one-half reported that they spent less than one hour each month at staff meetings. The number of meetings could also be increased. This is indicated by the fact that over one-half of the respondents favored holding at least two meetings each month while more than two-thirds reported that only one meeting was held.

The most favorable length for staff meetings seems to be from one to two hours. Forty-four per cent of the teachers and 34 per cent of the principals reported that their meetings were either longer or shorter than this. More than fifty per cent of the teachers favored holding meetings after school hours, as they most frequently are, but there are also indications that many of them would like to make use of some school time.

Many of the respondents had no preference as to what day of the week should be used for holding staff meetings. Days which are earlier in the week appeared to be favored by opinion, practice, and by the literature. The staff room is considered to be the most suitable place for holding meetings and is also the place which is most commonly used.

Agenda and Other Planning

The respondents favored having an agenda prepared beforehand

as it seems is done in many schools. Respondents favored an increase in the number of times that an agenda is made available to teachers before the meetings. The reports indicated that the principals were doing most of the planning for staff meetings while opinions favored giving the teachers a greater share in this. Opinions also seemed to indicate that the meetings should be scheduled for a particular day at a particular time and that it should not be a general practice to hold meetings only when the principal or the teachers feel that it is necessary.

Refreshments

Most of the respondents favored having refreshments served at least sometimes. The reported practices showed as much variation as did the opinions. More principals than teachers appeared to be in favor of having refreshments served.

Chairman and Teacher Participation

The investigation revealed that both teachers and principals favor having a teacher act as chairman more often than is being done now. It is interesting to note that principals were more in favor of this practice than were the teachers. Both groups felt that there should be an increase in teacher participation at the meetings.

Reaching Decisions

Over 80 per cent of the respondents thought that there should usually be an attempt made to reach consensus but that at times questions should be decided by a vote or by the principal. Respondents favored an increase in the practice of keeping a record summary of the meetings, and in making a summary available to the teachers.

Type of Meeting

Results appeared to show that the respondents favored a slight decrease in the number of informal meetings. This may be a reaction to the degree of informality rather than to informal meetings as such. Another practice in which respondents felt that there should be a decrease was in the number of oral announcements. It may be that respondents preferred to have announcements made from day to day through printed bulletins rather than having all of them left for staff meetings.

Attendance

There is general agreement that all teachers should attend the regular meetings and that they do. Some respondents favored holding grade-level staff meetings. This probably applies to those times when topics to be discussed concern only teachers of particular grades, especially in larger schools.

Values of Meetings

Most of the respondents felt that staff meetings were of some value, and over one-half indicated that the meetings helped to improve their classroom instruction. Meetings were considered to be helpful because they enabled teachers to learn about newer techniques and improved methods of teaching, to exchange ideas with other teachers, and to learn of improved methods of maintaining discipline. Teachers also stated that the meetings enabled them to obtain solutions to specific problems. Principals indicated that meetings helped them in the administration of the school. The main general value of holding staff meetings appeared to be that they brought about greater unity, cooperation, and understanding among staff members. Some teachers suggested that the main reason why they had not found the meetings helpful was that no attempt had been made to use them to try to improve instruction.

Problems

The main problems encountered in holding meetings appear to be a lack of time in which to plan and to hold meetings and also a lack of participation and interest on the part of some staff members. As might be expected, the main suggestions which the respondents had to make for improving the meetings were that there should be more and better planning and that teachers should participate in planning the meetings.

Recommendations

A major recommendation from this study appears frequently in the literature; that is, that the first meeting each year should be devoted to the cooperative planning of the meetings for the entire year and that teachers should have a part in planning such things as time, place, length, and frequency of meetings. The following recommendations are suggested to be used as a guide and could be modified to suit the circumstances of a particular school.

1. The main purpose for holding staff meetings should be to improve the school's instructional program with a reduction in the amount of time and emphasis devoted to administrative detail.
2. From two to four hours should be spent in staff meetings each month.
3. Two meetings each month should be held.
4. Each meeting should not be less than one hour nor more than two hours in length.
5. One of the meetings each month should be held after school hours; the other should be held partly in school hours, if possible.

6. The meetings should be held on a day early in the week.
7. If the size of the group permits, meetings should be held in the staff room. Otherwise the library or a classroom could be utilized.
8. An agenda should be prepared beforehand and should be made available to the teachers at least one day before the meeting.
9. Teachers should help develop the plan for each meeting as well as the overall yearly plan.
10. Each of the meetings should be part of a larger program of in-service training or of professional improvement.
11. Meetings should be scheduled for a particular day and for a specific time. Meetings should start and end on time.
12. Refreshments should be served before the meetings which are held entirely outside of school hours.
13. A teacher should sometimes act as chairman, but the principal should be in the chair when administrative matters are being discussed.
14. Teachers should be encouraged to take an active part in the discussions and should be invited to make reports on reading and on studies.
15. An attempt should always be made to reach consensus. If this fails, the question should, depending upon the issue, either be put to a vote or be left for the principal to decide.
16. There should be a recorder to take minutes of the meetings. The meetings should end with a summary, and a typed summary of the meeting should be distributed the day after the meeting.
17. Meetings should be informal but business-like.
18. Most schools should make use of bulletins for day to day announcements. Those announcements which have to be made at meetings should be made orally.
19. All teachers in the school should attend the regular meetings.
20. Teachers of a particular grade or particular subject should meet separately when the topics to be discussed are not of general interest.

A THREE YEAR ACADEMIC HISTORY OF EIGHT HUNDRED AND THIRTY-THREE SUPERIOR ALBERTA GRADE IX STUDENTS

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Repeatedly one reads in the daily newspapers or hears in formal speeches or is told on the street that the schools are neglecting their brighter students. These students, it is claimed, do not measure up to potential and are leaving the schools in large numbers. Usually these comments are based on hearsay or on information about an individual student. Certainty is not to be had.

This study reports on the progress through high school of certain students identified in Grade IX as being of academically superior ability and performance. Performance was measured by the aggregate score on the five subjects of the Grade IX Departmental examinations. Specifically, these students stood in the eighth or ninth stanine on both the General Test and Grade IX aggregate test scores. Of 13,737 students writing the examination in June 1955, 833 or 6.1% of this group were thus identified as superior. This study examines the academic performance of these 833 students in Alberta high schools for the succeeding three years, and presents its findings under the following headings: type of school attended and type of program attempted; final marks in nine subjects matter fields for each of three senior high school years; total number of credits attempted and earned in each of three years; success in obtaining a High School Diploma; and a note on how many of these students achieved matriculation standing and entered the University of Alberta.

Data for this study were obtained from the records of the Department of Education and the Registrar's Office of the University of Alberta and were collected originally for the Cameron Royal Commission on Education.

I: Type of Program Attempted and Type of School Attended.

For this analysis, the high schools of the Province were categorized according to the number of teachers on staff. This categorization was based on data taken from the "A" cards for each school, which are submitted yearly to the Department by school superintendents and high school inspectors. The schools were classified for each of the four successive years of this study, 1955, '56, '57, '58 (Grades

IX through XII). High schools were classified as small if they taught a reduced program. i.e., if there was less than one teacher for each grade taught. The remaining categorization is self-evident with the exception of the large high schools, i.e., schools with more than eight teachers. These schools were divided into two classifications: composite high schools, and the remainder, which for the purposes of this study will be referred to as large academic high schools.

The original classification of student programs was based, first, on students attempting ten or more credits in vocational electives, second, those attempting Matriculation programs which could be identified from the courses attempted in a particular year, and finally, General program students which were those who did not fit in either of the above two categories. For the purposes of this study students attempting vocational and general programs were pooled into a single group called General program although it must be noted that certain students by full utilization of the forty credits of instruction, possible per week in Alberta schools, could attempt a matriculation program and still have the required number of vocational option credits to place them in the general program category.

Drop-out is another term that will require definition. A drop-out will mean any student who did not enroll in a high school in the Province of Alberta the following year. As can be seen, some of these students who will be classed as drop-outs may well have moved outside the province and entered high schools in their new place of residence or returned to Alberta high schools at a later date. In this particular regard, the Department of Education completed a follow-up study of eighty students scoring in the ninth stanine on the 1955 Grade IX Departmental aggregate score who dropped out at the end of Grade IX. It is noted that some of these eighty students are included in the present study sample. The Department found that of these eighty, 15 returned to Alberta schools, of whom 13 completed Alberta High School Diplomas, 9 of these being of matriculation standing. Twenty-four of the group moved from the Province and from the replies received, 14 continued their schooling in their new place of residence. Ten did not reply. Twenty-five of the students were legitimate drop-outs while another two died during the period under investigation. No trace could be found of the remaining fourteen students. In other words, of these eighty students identified as drop-outs, at least thirty-six per cent eventually continued their schooling in Alberta or elsewhere. It was not possible from the data available in this study to determine what proportion of the students dropping out were true drop-outs in the

TABLE I
DISTRIBUTION OF STUDENTS BY TYPE OF SCHOOL AND TYPE OF PROGRAM ATTEMPTED FOR
FOUR SUCCESSIVE YEARS OF HIGH SCHOOL IN ALBERTA (N = 833)

Program	Grade IX			Grade X				Grade XI				Grade XII	
			Enrol.	Matric.		General		Matric.		General		Matric.	General
	Dp.	Ot.		Dp.	Ot.	Enrol.	Dp.	Ot.	Enrol.	Dp.	Ot.		
Type of School	Enrol.	Dp.	Ot.	Enrol.	Dp.	Ot.	Enrol.	Dp.	Ot.	Enrol.	Dp.	Ot.	Enrol.
Small High Schools (less than 1 teacher/grade)	176	16		49	1	17		30	1	61	2	63	7
Small Standard Time High Schools (1 teacher/grade)	159	14		119	2	81	1	95	7	15	1	91	6
Medium High Schools (4-8 teachers)	221	16		112	2	3		129	10	19	5	119	16
Large (Academic High Schools) (over 8 teachers)	245	31		131	2	9		139	7	11	1	130	20
Large (Composite) High Schools (over 8 teachers)				139	1	6		135	6	57	11	151	26
Unidentified High Schools	32	6		39		45	1	29	1	20	4	42	13
TOTALS	833	83		589	8	161	2	557	32	183	24	596	88

conventional meaning of the term. The figures cited must be considered as maximum and the reader is cautioned accordingly.

The analysis of data for type of program attempted and type of school attended is reported in Table I.

The first figure to note is the number of students dropping out. Eighty-three, or ten per cent, of the superior students dropped out at the end of grade nine, but only ten from Grade X. It will be noted that the ratio of General program to Matriculation students was 2:7. Most of the former came from small standard time and unidentified high schools, schools able to offer only a limited curriculum. This would restrict their choice, a restriction that is particularly evident in Grade XI, where the ratio of General to Matriculation differs little from that of Grade X. At the end of Grade XI, fifty-six students dropped out.

The Grade XII distribution of type of school to program attempted presents some conflicting trends. For example, while the number of students attempting Grade XII Matriculation programs in small high schools increases markedly over Grade XI, the same trend is not so apparent from the data on the Composite high schools. One explanation might be that curricular deficiencies have been overcome through enrolment in correspondence courses and other additions to a normal program, thus enabling the student to move from the General to the Matriculation route.

II: Marks Received by Superior Students in Three Years of High School.

In the analysis of the performance of gifted students, the courses available to them have been divided into nine broad categories: English, Social Studies, Mathematics, Science, Foreign Language, Commercial, General, Homemaking, and Technical electives. The General category consists of courses not fitting into the other categories and includes such options as Health and Physical Development, Physical Education, Art, Drama, Music, Psychology, Sociology, Economics, Arts and Crafts, Geology and Commercial Law. The distribution of marks of the superior students is compared with the marks obtained by all students in the original Royal Commission sample ($N=13,739$) for these same grades, reported earlier by Black.* These data are presented in Tables II-IV.

The Tables show one fact clearly. These 750 students as a group performed in a fashion superior to the general grade population. Their marks for the most part fall in the 70-99 range although there are failures in every subject area for every grade. Perhaps one of

*Black, Donald B., "Distribution of Final Marks in Nine Course Areas in Alberta Senior High Schools." *Alberta Journal of Educational Research*, Vol. VI: 3, 137-152, (September, 1960).

TABLE II
PERCENT DISTRIBUTION OF MARKS ACHIEVED BY SUPERIOR STUDENTS (N = 750)
PERCENT DISTRIBUTION OF MARKS ACHIEVED BY ALL STUDENTS IN PROVINCE (N = 10,709)
IN GRADE X FOR NINE SUBJECT PATTERN AREAS

Subject Area	Final Grades										Not Attempted
	00-09	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
English *S **P	1	1	8	 6.2	.4 18.2	3.6 27.2	16.1 25.2	41.2 16.1	35.0 5.7	3.7 .4	5
Social Studies S P	.1 .1	2	 1.7	 6.1	.8 17.8	3.6 23.3	13.7 23.7	30.9 16.6	40.6 9.1	10.3 1.4	6
Mathematics S P	.7 .1	7	 3.8	.1 7.8	.8 17.9	6.8 24.2	16.7 19.9	21.6 13.6	35.0 9.3	18.3 2.7	 3.9
Science S P	01	2	 1.1	 5.9	.3 16.7	4.3 26.5	15.6 23.8	33.9 16.2	35.9 8.2	10.0 1.4	1.2 8.4
Foreign Language S P	.6 1.0	1	 2.1	 3.8	1.4 9.9	11.5 17.2	14.9 21.0	21.6 19.8	34.5 17.8	15.5 7.2	80.3 90.0
Commercial S P	1.2 .2	1	8	.4 4.0	4.4 14.2	10.5 25.5	24.1 27.7	27.4 16.9	24.3 8.8	7.7 1.8	36.3 32.8
General S P	03	05	1	.2 .9	1.5 6.8	5.7 26.3	2.7 39.3	44.7 22.1	17.6 4.3	.6 .1	.3 .8
Home Making S P	1	..... .....	..... .3	 1.3	1.2 5.6	4.0 13.8	12.7 27.7	28.2 31.9	45.4 16.9	8.7 2.4	76.8 76.3
Technical S P	..... .....	..... .1	4	.5 2.7	.5 8.8	7.6 23.9	26.6 32.9	34.8 22.5	24.5 7.8	5.5 .9	75.5 72.0

*S: Superior Students
**P: All Students in the Province

TABLE III

PERCENT DISTRIBUTION OF MARKS ACHIEVED BY SUPERIOR STUDENTS (N = 740)

PERCENT DISTRIBUTION OF MARKS ACHIEVED BY ALL STUDENTS IN PROVINCE (N = 8,561)

IN GRADE XI FOR NINE SUBJECT PATTERN AREAS

Option	Final Grades										Not Attempted
	00-09	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
English S P	..... .....	..... .1	.1 .7	.1 5.9	.6 18.2	5.7 25.2	19.1 25.6	39.3 16.7	30.9 6.4	4.2 .6	.3 .8
Social Studies S P	..... .....	..... .1	.3 1.3	.3 6.0	1.4 16.8	6.0 23.2	18.0 24.2	29.4 17.0	36.1 9.8	8.5 1.6	.4 1.3
Mathematics S P	.1 .04	.1 .4	.1 2.2	.4 5.9	2.5 17.0	12.1 26.5	19.3 21.0	22.3 14.5	28.8 9.8	14.3 2.7	2.4 17.7
Science S P	01	2	9	.4 4.4	1.7 14.5	8.2 25.9	17.7 23.5	27.6 17.9	34.7 10.8	9.7 1.9	2.4 15.7
Foreign Language S P	1	8	.4 3.3	.8 5.2	3.9 13.7	11.3 22.5	17.8 20.4	23.3 17.2	31.9 13.0	10.6 3.8	4.2 30.9
Commerical S P	.6 .1	1	.3 .7	 3.4	2.7 12.7	6.4 23.9	24.4 25.5	25.8 19.7	29.1 11.5	10.7 2.4	59.6 47.8
General S P	.2 .1	1	.2 .5	1.7 2.1	2.9 8.2	6.7 20.4	19.2 32.4	29.6 23.8	32.2 10.8	7.3 1.6	35.3 33.8
Home Making S P	..... .....	..... .1	3	 1.0	.8 4.5	6.6 13.4	13.9 24.5	32.0 31.5	35.2 21.2	11.5 3.5	83.5 79.3
Technical S P	..... .....	..... .....	.7 .4	.7 1.2	.7 6.4	8.6 21.2	25.7 32.2	27.1 24.6	32.9 12.2	3.6 1.8	81.1 76.7

TABLE IV
PERCENT DISTRIBUTION OF MARKS ACHIEVED BY SUPERIOR STUDENTS (N = 684)
PERCENT DISTRIBUTION OF MARKS ACHIEVED BY ALL STUDENTS IN PROVINCE (N = 6,339)
IN GRADE XII FOR NINE SUBJECT PATTERN AREAS

Option	Final Grades										Not Attempted
	00-09	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	
English S P	..... .....	..... .2	 2.7	 10.1	2.2 26.7	11.6 24.8	25.4 19.3	33.0 10.8	25.4 5.1	2.4 .3	1.0 2.9
Social Studies S P	..... .....	..... .7	 4.3	.1 10.1	2.5 24.0	8.9 24.0	29.7 20.9	32.0 10.6	23.2 4.9	3.6 .5	1.2 3.2
Mathematics S P	6	.5 2.3	.3 3.5	1.5 6.5	12.2 23.8	22.4 26.9	24.0 19.5	23.9 11.8	11.9 4.3	3.3 .8	3.8 26.4
Science S P	1	.1 .8	.4 4.9	1.1 11.1	8.4 24.2	16.2 25.3	28.9 19.9	27.7 9.9	13.7 3.3	3.5 .5	2.5 11.3
Foreign Language S P	5	.5 2.1	.2 4.9	.5 5.5	8.4 20.5	18.3 25.5	29.0 21.0	25.0 13.8	13.8 4.8	4.3 1.4	7.7 33.1
Commerical S P	2	2	5	 2.1	4.8 13.3	4.8 24.2	22.2 26.0	27.0 22.2	27.0 9.2	11.2 2.1	90.8 74.7
General S P	27.1 6.2	.9 .3	3.7 1.2	.9 2.0	 8.4	3.7 22.4	14.0 30.4	21.6 20.0	22.5 8.3	5.6 .8	84.4 69.5
Home Making S P	..... .....	5.9 .2	4	4	11.8 3.8	 14.2	23.5 31.8	17.6 29.9	29.4 18.5	11.8 .8	97.5 92.4
Technical S P	..... .....	..... .2	5	7	16.7 8.4	 22.6	16.7 36.2	33.2 23.8	16.7 7.1	16.7 .5	99.1 93.1

the most interesting features in the Grade X year is the small percentage of students who took a foreign language in that year. Foreign languages are normally begun in Grade XI.

As noted above, some of the students did in fact fail, the failure rate increasing with each year of high school. This increase occurred not just in the areas tested by the Grade XII Departmentals but in the vocational electives as well. Failure rates of over fourteen per cent in mathematics, and of ten per cent in science and foreign language options would suggest that the cause lies with the students and/or the schools themselves.

III: Number of Credits Attempted and Earned for each Year of High School.

This section deals with enrichment of program. The Alberta high school week is divided into forty credits of instruction time. It is normal for most students to attempt from thirty-four to thirty-six credits per week. Credit loads in excess of this are considered heavy for the average students. These data are presented in Table V.

From this Table, it can be seen that in Grades X and XI, the majority of superior students attempted full programs of thirty-seven or more credits, and for the most part were successful in achieving credit in the work attempted. However, in Grade XII an anomaly appears: a striking drop in the 37-40 credit registration and an equally striking increase in the 40 + registrations. The drop is probably accounted for by the student practice of making Grade XII a two-year program; the increase by the addition of extra-school music credits and of credits earned at special summer schools. In any event the preponderance of credit loads in excess of thirty-six suggests a tendency on the part of high schools to give the superior student an enriched program.

IV: Success of Superior Grade IX Students in Obtaining a High School Diploma After Three Years of High School.

The academic records of the superior students were examined to determine how many, after three years, achieved a High School Diploma, if this diploma was of matriculation standard, how many entered the University of Alberta in the fall, or on the contrary how many returned to high school. These data are presented in Table VI.

A number of points appear immediately from this Table. First, almost five hundred of the students achieved matriculation standing at the end of three years of high school. Of these, just over three hundred entered the University directly. Fifty-six returned for a

TABLE V
DISTRIBUTION OF SUPERIOR STUDENTS ON THE SCALE OF CREDITS

Credits	0-8	9-16	17-20	21-24	25-28	29-32	33-36	37-40	41 and Over*	Total
Grade X —Attempted .....	.....	.....	.....	1	.....	7	232	509	1	750
Grade X —Earned .....	.....	.....	.....	1	.....	9	233	506	1	750
Grade XI —Attempted	1	.....	2	4	7	30	280	416	.....	740
Grade XI —Earned	2	.....	2	17	10	38	264	407	.....	740
Grade XII —Attempted	3	1	10	3	25	200	370	46	26	684
Grade XII —Earned	3	7	16	5	32	200	352	44	25	684

*Credit for Music or attendance at summer school may account for credits exceeding 40 for any one year.

TABLE VI
GRADUATION STATUS OF 684 SUPERIOR STUDENTS AFTER THREE HIGH SCHOOL YEARS

Type of School Attended in Grade XII	Matriculation Standing			High School Diploma		Failed Diploma	
	N	Return 2nd year XII	Entered U of A in Fall	N	Returning for 2nd yr. of H. School	N	Returning for 2nd yr. of H. School
Small High School	53	5	33	11	3	6	2
Small Standard Time, High School	70	10	43	20	8	7	4
Medium High School	95	9	51	24	18	10	7
Large (Academic) High School	110	11	78	28	16	11	6
Composite High School	128	14	82	39	20	7	5
Unidentified High School	35	7	18	11	4	8	4
TOTALS	491	56	305	133	69	45	28

second year of Grade XII, presumably to raise their Department standings or to obtain credit in courses for admission to specific programs beyond high school. It is possible that students not entering the University of Alberta and not returning for a second year of grade twelve might have entered colleges and universities and/or entered programs demanding matriculation standards for admission, such as nursing. Of those achieving High School Diplomas but not with matriculation standard (133) over half (69) returned to take a second year of high school. Only forty-five superior students attempting Grade XII failed to obtain a High School Diploma at the end of the year but twenty-eight of these students returned to take a second year of Grade XII. It should be pointed out that undoubtedly many of those returning for a second year in these last two groups were students whose high school programs were planned to take four years to achieve matriculation standing. On this basis, many of the students failing to achieve a Diploma did so, not because of failing performance, but rather because their program did not include either English 30 or Social Studies 30 which are required subjects for a Diploma.

V. Summary

In summary, it was found that of students of high academic aptitude and performance as measured by the Grade IX Departmental Examinations, one in ten did not enter Grade X in this Province in the fall of the following year; one in eighty left school at the end of Grade X; one in sixteen at the end of Grade XI. Six in ten achieved Matriculation standing and a High School Diploma at the end of three years; one in six, a High School Diploma alone. Three in seventeen returned for a second year of high school while three in eight entered the University of Alberta in the fall, (three years after leaving Grade IX). One in fifty left Grade XII without a Diploma and without returning for a second year of Grade XII in this Province.

In terms of general academic performance during three years of high school covered in this study, these superior students as a group attempted ambitious high school programs and their achievement as a group was clearly superior to that of the Provincial population as a whole. On the other hand, it is noted that these students did have their failures. These occurred primarily in the areas of Mathematics, Science and Foreign Language options. As might be expected, however, the proportion of failures in all instances was well below the Provincial norm.

Several pertinent questions remain unanswered:

1. What are the facts regarding drop-outs? Collection of data on this point would necessitate a long-range intensive study.
2. What proportion of students take four or more years for the three grades of high school?
3. What type of career appeals to those who having completed Matriculation do not enter University?
4. Do superior students differ in any of these respects from the average student?

This report is mainly descriptive but conclusions are supported by statistics, admittedly incomplete. Two conclusions do seem well established, namely that superior students do not leave school prematurely in any great numbers, and that superior students achieve well in academic pursuits in the high school.

